MATERIAL SAFETY DATA SHEET

SRM Supplier: National Institute of Standards and Technology
Standard Reference Materials Program
Bldg. 202 RM 211
Gaithersburg, Maryland 20899

SRM Number: 1085b
MSDS Number: 1085b
SRM Name: Wear-Metals in Lubricating Oil
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SECTION I. MATERIAL IDENTIFICATION

Material Name: Wear-Metals in Lubricating Oil

Description: Lubricant oil with chemical additives. A unit of SRM 1085b consists of ten 5 mL ampoules: five amber borosilicate ampoules, each containing approximately 1.2 g of a blend of 21 constituent elements in a base oil at a nominal concentration of 300 mg/kg; and five ampoules, each containing approximately 1.2 g of a matching base oil intended for use as an analytical blank and for matrix matching.

Other Designations: Metals in Lubricating Base Oil (mineral oil, petrolatum liquid, paraffin oil); **Trace Elements** (aluminum, boron, barium, calcium, cadmium, chromium, copper, iron, lead, magnesium, manganese, molybdenum, nickel, phosphorus, silicon, silver, sodium, tin, titanium, vanadium, and zinc) in **Lubricating Oil** (C_{14} to C_{20} hydrocarbons).

Name	CAS Registry Number
White Mineral Oil	8042-47-5
Solvent Neutral Oil	64742-65-0

DOT Classification: Not regulated by DOT

Manufacturer/Supplier: Conostan Division, Conoco, Inc., Houston, TX

SECTION II. HAZARDOUS INGREDIENTS

Hazardous Components*	Nominal Concentration (%)	Exposure Limits and Toxicity Data
White Mineral Oil	0 to 100	ACGIH TLV-TWA: 5 mg/m^3 (8 h) OSHA PEL-TWA: 5 mg/m^3 (8 h)
Solvent Neutral Oil	0 to 100	ACGIH TLV-TWA: 5 mg/m^3 (8 h) OSHA PEL-TWA: 5 mg/m^3 (8 h)

*This material may contain one or more of the above base oils.

NOTE: The concentration level of each trace element in this material is less than 0.1 %, which is below the reportable limit (0.1 % for carcinogens, 1 % for all other hazards) required by OSHA according to 29 CFR 1910.1200(g)(2)(i)(C)(l). For the actual concentrations of the trace elements, refer to the corresponding Certificate of Analysis.

SECTION III. PHYSICAL/CHEMICAL CHARACTERISTICS

Lubricating Base Oil	
Appearance and Odor: clear, brown, oily liquid; may have a slight petroleum odor	**Viscosity:** 14 cSt to 72 cSt at 40 °C
Specific Gravity (H_2O = 1): 0.6 to 0.9	**Volatiles (% by Volume):** negligible (ambient condition)
Vapor Pressure (Air = 1/mm Hg): negligible	**Solubility in Water (vol/vol at 0 °C):** negligible
Boiling Point: > 315 °C	

SECTION IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point: > 210 °C **Method Used:** Cleveland Open Cup - COC **Autoignition Temperature:** Not applicable

Flammability Limits in Air (Volume %): **UPPER:** Not available
LOWER: Not available

Extinguishing Media: Use water spray, foam, dry chemical, or carbon dioxide.

Special Fire Procedures: Fire fighters should wear self-contained breathing apparatus (SCBA) and full protective clothing. Water or foam may cause frothing. Use water to keep fire-exposed containers cool. Water may be used to flush spills away from exposures.

Unusual Fire and Explosion Hazards: Lubricating oil is a slight fire hazard when exposed to heat, sparks, or open flames.

SECTION V. REACTIVITY DATA

Stability: __X__ **Stable** ____ **Unstable**

Conditions to Avoid: Avoid heat, sparks, and flames.

Incompatibility (Materials to Avoid): This material is incompatible and can react with strong oxidizers.

Decomposition Products Under Fire Conditions: Normal combustion forms carbon dioxide; incomplete combustion may produce carbon monoxide.

See Section IV: *Fire and Explosion Hazard Data*

Hazardous Decomposition or Byproducts: Thermal decomposition or burning may produce carbon monoxide.

Hazardous Polymerization: ____ **Will Occur** __X__ **Will Not Occur**

SECTION VI. HEALTH HAZARD DATA

Route of Entry: __X__ **Inhalation** __X__ **Skin** __X__ **Ingestion**

Health Hazards (Acute and Chronic): The product, as with many petroleum products, may cause minor skin, eye, and lung irritation, but good hygienic practices can minimize these effects.

Normal use of this product does not result in generation of an oil mist. However, if an oil mist is generated, overexposure can cause minor and reversible irritation to the eyes, skin, and especially the lungs. Proper personal protective equipment and sufficient ventilation can provide adequate protection.

Signs and Symptoms of Exposure: Overexposure to the oils can cause headache, dizziness, and/or drowsiness. Nausea, vomiting, and diarrhea are also indicative of excessive exposure.

Medical Conditions Generally Aggravated by Exposure: Not available

Listed as a Carcinogen/Potential Carcinogen:

	Yes	No
In the National Toxicology Program (NTP) Report on Carcinogens	X*	
In the International Agency for Research on Cancer (IARC) Monographs	X**	
By the Occupational Safety and Health Administration (OSHA)		X

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* NTP classifies the following materials as:

Cadmium:	Reasonably Anticipated to be a Human Carcinogen
Chromium Hexavalent:	Known to be a Human Carcinogen
Nickel:	Reasonably Anticipated to be a Human Carcinogen

**IARC classifies the following materials as:

Cadmium and cadmium compounds:	Group 1, Carcinogenic to Humans
Chromium (VI) compounds:	Group 1, Carcinogenic to Humans
Lead and inorganic lead compounds:	Group 2B, Possibly Carcinogenic to Humans
Nickel and nickel compounds:	Group 1, Carcinogenic to Humans

EMERGENCY AND FIRST AID PROCEDURES:

Skin Contact: Remove contaminated shoes and clothing. Rinse affected area with large amounts of water followed by washing the area with soap and water. If irritation develops and persists, obtain medical assistance.

Eye Contact: Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Obtain medical assistance.

Inhalation: If inhaled, remove the victim to fresh air. If breathing is difficult, give oxygen; if victim is not breathing, give artificial respiration. Obtain medical assistance if necessary.

Ingestion: DO NOT induce vomiting. If ingested, wash out mouth with water. Obtain medical assistance.

TARGET ORGAN(S) OF ATTACK: skin, eyes, and upper respiratory tract

SECTION VII. PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken in Case Material Is Released: Notify safety personnel of large spills and/or leaks. Remove all sources of heat and ignition. Provide maximum explosion-proof ventilation. Evacuate all nonessential personnel from the area. Use appropriate personal protective equipment during cleanup. Soak up with sawdust, sand, oil dry, or other absorbent material. Keep out of sewers, watersheds, and waterways.

Waste Disposal: Place in a suitable container for licensed contractor, burn in an approved incinerator, or place in a landfill. Follow all federal, state, and local regulations.

Handling and Storage: To prevent skin contact, wear oil-impervious gloves and, if necessary, oil-impervious clothing. Wear safety goggles to prevent contact with the eyes. Remove contaminated clothing and **DO NOT** reuse until after it has been properly laundered. Eyewash stations and safety showers should be available in areas of use.

> **NOTE:** Contact lenses pose a special problem; soft lenses may absorb irritants and all lenses concentrate them. **DO NOT** wear contact lenses in the laboratory.

Provide adequate ventilation. Store containers in a cool, dry, well-ventilated area, away from strong oxidizing agents. Protect containers from physical damage.

SECTION VIII. SOURCE DATA/OTHER COMMENTS

Sources: Conoco, Inc., MSDS *Conostan 75 Base Oil*, MSDS No. CONC0001, 26 November 1998.
Conoco, Inc., MSDS *Conostan S-21 Blended Standards*, MSDS No. CONC0220, 06 June 1997.

Disclaimer: Physical and chemical data contained in this MSDS are provided only for use in assessing the hazardous nature of the material. The MSDS was prepared carefully, using current references; however, NIST does not certify the data on the MSDS. The certified values for this material are given in the NIST Certificate of Analysis.